This application claims the benefit of provisional applications Nos. 60/223,367, 60/223,368, 60/223,369, all filed Aug. 7, 2000, and 60/249,365, filed Nov. 16, 2000.

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Process for sizing paper

The present invention relates to a process for sizing paper which comprises adding to a suspension containing cellulosic fibres, and optional fillers, a sizing dispersion comprising a sizing agent and a polymer having one or more aromatic groups, and a sizing promoter comprising a polymer having one or more aromatic groups, forming and draining the obtained suspension, wherein the sizing dispersion and the sizing promoter are added separately to the aqueous suspension.

Background

Dispersions or emulsions of sizing agents are used in papermaking in order to give paper and paper board improved resistance to wetting and penetration by various liquids. The sizing dispersions are usually added to an aqueous suspension containing cellulosic fibres, optional fillers and various additives. The aqueous suspension is fed into a headbox ejecting the suspension onto a wire where a wet web of paper is formed. To the suspension is further commonly added compounds such as starches and microparticulate materials which facilitate the dewatering of the suspension on the wire. The water drained from the wire, referred to as white water, is usually partly recirculated in the papermaking process. The cellulosic suspension contains a certain amount of non-fibrous material, for example fillers, charged polymers, sizing agents and various charged contaminants, i.e. anionic trash, electrolytes, colloidal substances, etc.. Part of the non-fibrous material has an influence on the sizing efficiency and will likely impair the sizing efficiency. High amounts of charged compounds such as high contents of salts in the suspension renders a suspension which is increasingly difficult to size, i.e. to obtain a paper with satisfactory sizing properties. Other compounds contained in the suspension which deteriorates sizing are various lipophilic wood extractives which may come from recycled fibres and high yield pulps, i.e. mechanical pulps. An increased amount of added sizing agent often improve sizing, however, leading to higher costs as well an increased accumulation of sizing agents in the white water. The accumulation of non-fibrous material as well as any other component present in the suspension will be even more pronounced in mills where white water is extensively recirculated with the introduction of only low amounts of fresh water into the papermaking process. Thus, it is an objective of the present invention to further improve sizing. Another objective of the present invention is to improve sizing when applying sizes on cellulosic suspensions having high conductivity and/or high amounts of lipophilic wood extractives. Yet further objectives will appear hereinafter.

WO 99/55964 refers to a process for production of paper, where a drainage and retention aid is added to a suspension comprising a cationic or amphoteric